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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,692

10/18/2005

Kazuo Tanaka

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OLIFF & BERRIDGE, PLC

P.O. BOX 19928

ALEXANDRIA, VA 22320

EXAMINER

WILLS, MONIQUE M

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

06/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,692	<b>Applicant(s)</b> TANAKA ET AL.	
	<b>Examiner</b> Monique M. Wills	<b>Art Unit</b> 1745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/18/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statements filed October 18, 2005 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Accordingly, the information disclosure statement(s) is/are being considered by the examiner, and an initial copied is attached herewith.

### *Foreign Priority Documents*

The Japanese foreign priority document(s) 2003-186933, filed June, 30, 2003 & 2004-062096, filed March 5, 2004 and submitted under 35 U.S.C. § 119 (a)-(d), has/have been received and placed of record in the file.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is recites the limitation "a second cooler for cooling the exhaust gas to be supplied to the second compressor" however, there is no first cooler in

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the independent claim. There is insufficient antecedent basis for this limitation in the claim.

*Claim Rejections – 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

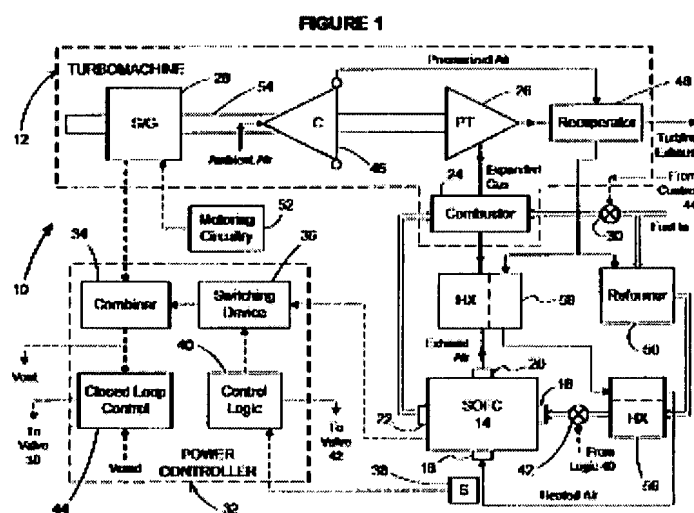
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7 & 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolfe et al. U.S. Patent 5,968,680.

With respect to claim 1, Wolfe teaches: a fuel cell-atmospheric-pressure turbine hybrid system comprising: a combustor (24) for burning an exhaust gas discharged from an atmospheric-pressure, high-temperature fuel cell (14); a turbine (26) in which a combustion gas discharged from the combustor expands and the pressure of the combustion gas drops to a negative pressure; a compressor (46) for compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas; and a heat exchanger (58 or 56) for

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transferring heat from the high-temperature exhaust gas discharged from the turbine to low-temperature air to be supplied to the fuel cell. The limitation with respect to the compressor “compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas” is an intended use. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987). Therefore, the limitations are satisfied, as the compressor is capable of performing said functions. See Figure 1.



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With respect to **claim 3**, a cooling device (58) disposed below (down stream) of the heat exchanger (56) to cool an exhaust gas discharged from the heat exchanger (56). See Figure 1.

With respect to **claim 7**, a fuel supply device for supplying a fuel other than the cell exhaust gas to the combustor is controlled from valve 30. See Figure 1.

With respect to **claim 9**, the fuel cell system comprises: a combustor (24) for burning a cell exhaust gas discharged from an atmospheric-pressure, high-temperature fuel cell (14); a turbine (26) in which a combustion gas of a pressure substantially equal to the atmospheric pressure discharged from the combustor expands and the pressure of the combustion gas drops to a negative pressure; a compressor (46); and an air supply line through which air is supplied to the combustor. See Figure 1. The limitation with respect to the compressor “compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas” is an intended use. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987). Therefore, the limitations are satisfied, as the compressor is capable of performing said functions. See Figure 1.

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With respect to claim 10, a second heat exchanger (56 or 58) is supplied and is capable of transferring heat of an exhaust gas discharged from the turbine to an exhaust gas discharged from the compressor. The heat exchanger is capable of performing the intended use and therefore satisfies the instant claim limitations.

Therefore, the instant claims are anticipated by Wolfe.

*Claim Rejections – 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 & 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. U.s. Pat. 5,986,680.

Wolfe teaches the fuel cell system as described in the rejection recited hereinabove.

Wolfe does not expressly disclose a second compressor disposed coaxially with the compressor to compress exhaust gas or a second cooler for

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cooling the exhaust gas to be supplied to the second compressor (claim 4). The reference is also silent to a second turbine capable of burning a fuel and an exhaust gas discharged from the second turbine and supplying a combustion gas to the first turbine (claim 8).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the second compressor, cooler and turbine, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis co.*, 193 USPQ 8. The skilled artisan recognizes that duplicate process maximizes efficiency of operating the fuel cell system.

*Claim Rejections – 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



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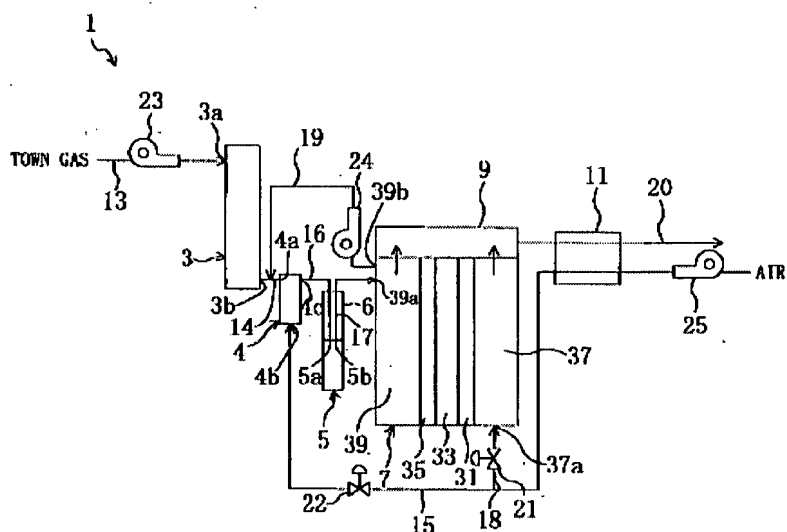
Claims 5-6 & 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. U.s. Pat. 5,986,680 in view of Matsui et al. U.S. Pub. 2006/0019139.

Wolfe teaches the fuel cell system as described in the rejection recited hereinabove. With respect to **claim 5**, Wolfe teaches a recuperator that recovers heat from the exhaust gas discharged from the turbine and supplies fuel to the reformer. See column 3, lines 15-35.

However, Wolfe does not expressly disclose supplying steam from the recuperator/evaporator to the reformer (**claim 5**); an air intake branch line (**claims 6 & 11**); or a valve placed in the branch line to adjust the distribution of air to the air supply line and air supply branch line (**claim 12**).

However Matsui teaches that it is conventional to supply air intake branch lines with control valves to distribute the amount of air in the branch lines (**claims 6 & 11-12**). See figure 1.

FIG. 1



Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the air branch line of Matsui in the fuel cell system of Wolfe to maximize the efficiency of air distribution to air demands thought the fuel cell system.

With respect to claim 5, although the recuperator does not supply steam to the reformer, the recuperator is capable of performing said function.

Therefore, the intended use statements necessitated by the instant claim have been satisfied.

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*Conclusion*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

6/5/07

  
**PATRICK JOSEPH RYAN**  
**SUPERVISORY PATENT EXAMINER**